

# **2000 Annual Report NATO/CCMS Pilot Study**

## **Clean Products and Processes (Phase I)**

***Report Number 242***

***U.S. Environmental Protection Agency***  
Technical University of Denmark  
Lyngby, Denmark

### **NOTICE**

This report was prepared under the auspices of the North Atlantic Treaty Organization's Committee on the Challenges of Modern Society (NATO/CCMS) as a service to the technical community by the United States Environmental Protection Agency (U.S. EPA). This report was produced as a result of a cooperative agreement with U.S. EPA's National Risk Management Research Laboratory, under the direction of E. Timothy Oppelt, and the Technical University of Denmark (DTU). This report was produced by Henrik Wenzel, Christine Molin, Michael Hauschild and Hans Henrik Knudsen of DTU. Mention of trade names or specific applications does not imply endorsement or acceptance by U.S. EPA or DTU.

NATO/Committee on the Challenges of Modern Society

PILOT STUDY on  
**CLEAN PRODUCTS and PROCESSES**  
3<sup>rd</sup> meeting



**2000 in Copenhagen**



*The Association of Danish Engineers Conference Center at the  
Copenhagen harbor front was the venue for the 2000 meeting*

## **PREFACE, INTRODUCTION AND OPENING OF THE MEETING**

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### **PREFACE**

The Committee on the Challenges to Modern Society (CCMS) was established by the Council of the North Atlantic Treaty Organization (NATO) in 1969. The mission of CCMS is to develop meaningful programs to share information among countries on important environmental and societal issues that complement other international efforts and to provide leadership in solving specific problems facing modern society. A fundamental role for CCMS is the transfer of technological and scientific solutions among nations facing similar environmental challenges.

The goal of reaching sustainable development, where human activities, including industrial manufacturing and commercial services, exist in harmony with the natural environment, including conservation of resources and energy, is an increasingly important aspiration for the nations of the world. With increasing populations demanding improved standards of living comes increasing industrialization and production. Also, with an expanding global marketplace and the explosion of information technology, social pressures on industries to become “greener” are increasing. The challenge to nations and industries is the achievement of sustainability while successfully competing in a global marketplace. We established this CCMS pilot study on Clean Products and Processes to create an international forum for open discussion on applying cleaner industrial processes and producing cleaner products around the globe. By discussing, debating, and sharing current trends, developments, and expertise in use of cleaner technologies and production of cleaner products, we hope that this pilot study will simulate productive interactions among international experts, with the end result being effective technology transfer.

The third meeting of the pilot study was held in Copenhagen, Denmark on May 7-12, 2000. This meeting maintained the momentum generated during the of the first two years of the pilot study, focusing on progress made on several pilot projects being implemented by participating nations and continuing to build a program of collaborative endeavors. This meeting featured a special topical seminar titled, Product Oriented Environmental Measures, which focused participants’ attention on advances in product design and use. The meeting featured several guest lectures on significant developments in government programs, academic research and industrial applications. This report presents the ideas and views shared by the delegates and invited participants at the Copenhagen meeting.

As we move ahead into the third year of this pilot study, we want to thank Associate Professor Henrik Wenzel, Technical University of Denmark, Institute for Product Development, for his gracious hospitality and hosting the third meeting of the pilot study. We also want to thank Christine Molin for her tireless efforts in planning and coordinating the Copenhagen meeting. We now look forward to continuing to build strong, cooperative relationships with our fellow delegates as we plan the fourth meeting of the pilot study to be held in Oviedo, Spain, in May 2001.

Subhas K. Sikdar, Pilot Study Director  
Daniel J. Murray, Jr., Pilot Study Co-Director

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### INTRODUCTION

Already at the first pilot study meeting in Cincinnati in 1998, we discussed the possibility of hosting one of the meetings in Denmark. The new Danish initiative on a product oriented environmental initiative had been presented, and the idea was to take the opportunity to go into more detail with product oriented measures at a later meeting hosted in Denmark. Denmark and the rest of the Nordic and Northern European countries are known to be drivers in product oriented environmental work, and by locating a meeting here, it would be possible to invite a number of companies, academia and authorities and to learn from their experience in the field. A special topic day addressing product-oriented measures was envisioned.

One year later, at the meeting in Belfast, it was decided to locate the year 2000 meeting in Copenhagen. Key persons from companies, academia and authorities all accepted invitations to present their product oriented work and all contributed to making the special topic day what it was intended to be – an introduction to state-of-the-art within product oriented work in the Nordic region. We are very grateful for their contribution and their willingness to share their experience with us. Another Danish focus area is renewable energy, especially wind- and biomass technology. We took the opportunity to present advances in both areas at the field trip to the Technical University of Denmark. As a special event, cleaner transportation was investigated, going back to the Viking Age and experiencing their means of transportation on land and over sea

The network between delegates, and the benefit of the pilot study is steadily growing. So is the volume of the annual meeting report. We have tried to keep this report focused, structured and easily accessible. The purpose of the report is to hold on to the information presented at the meeting and to serve as a catalyst of the ever increasing exchange of information and strengthening of the network.

The country delegates have supported the reporting very much by providing well-structured presentations, good abstracts and copies of slides and overheads or full papers. This has much facilitated the compilation of the material and creation of the report. The report comprises, thus, both elaborated abstracts, summaries of presentations and full papers.

We wish you pleasure with the reading.

On behalf of the organisers  
Henrik Wenzel  
Associate Professor  
Meeting host

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### OPENING OF MEETING

The pre-meeting opening session was held in the Danish Design Center in the heart of Copenhagen. Surrounded by an exhibition of Danish and International designed furniture, the NATO/CCMS pilot study director Subhas Sikdar, co-director Dan Murray and the Copenhagen meeting host, associate professor Henrik Wenzel, bid all the delegates and guests welcome and conveyed their expectations for the meeting to be held the four following days at the conference center of Danish engineers on the Copenhagen harbour front.



*Get-together at the Danish Design Center in Copenhagen*

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*Welcome by pilot study director, co-director and Danish host*

Following the welcome, the delegates and guest were able to visit the exhibition TASTE in the adjoining showroom. The TASTE exhibition was organised for the Design Center by one of the world's most foremost commentators on design, style and culture Stephen Bayley, educated at Manchester University and Liverpool School of Architecture.

### INTRODUCTION TO CITY HALL VISIT AND PRESENTATION

During the first day morning session, the meeting adjourned for a few hours to attend a reception at the Copenhagen Town Hall. The reception was hosted by one of the seven the Mayors of Copenhagen, Mayor of the Environment Bo Asmus Keldgaard,



*Reception at Copenhagen City Hall - the Mayor of the Environment welcoming the NATO/CCMS Pilot Study participants*

### **A SUMMARY OF THE PRESENTATION GIVEN BY MAYOR OF THE ENVIRONMENT BO ASMUS KJELDGAARD,**

Authorities like the Municipality of Copenhagen has an obligation to work for a more sustainable public procurement in order to encourage the creation of cleaner products in our supply lines.

Copenhagen has a lot of experience in the environmental field. The city is international renown for its waste management, where an excellent partnership between citizens, companies and authorities has created a comprehensive system.

Although Copenhagen has achieved a lot in the environmental field, there is still a long way before the city achieves its goal of becoming a Sustainable City. Growing traffic makes it difficult to meet the targets in the CO<sub>2</sub> reduction plan, and the soil of the city is in places widely polluted by diffuse soil pollution. However, these are not facts, which are disguised. Hard work is done to overcome the problems, and the first precondition for handling environmental problems is to recognize them. [RETURN TO CONTENTS PAGE](#)